

1. A method of making a sensor to measure an analyte in a solution, the method comprising:

providing a substrate;

printing conductive ink on the substrate to form a plurality of electrode regions;

depositing an electrical insulation to cover one of the electrode regions;

5       sonically ablating the electrical insulation to form an array of pores through the electrical insulation to the conductive ink in the one electrode region; and

depositing metal into the pores to form an array of electrodes in the one electrode region.

2. The method of claim 1 wherein depositing the metal comprises depositing gold.

10

3. The method of claim 1 wherein depositing the metal comprises depositing platinum.

4. The method of claim 1 wherein depositing the metal comprises depositing chromium.

15

5. The method of claim 1 wherein depositing the metal comprises depositing nickel.

6. The method of claim 1 wherein depositing the metal comprises depositing cadmium.

7. The method of claim 1 wherein depositing the metal comprises depositing copper.

20

8. The method of claim 1 wherein depositing the metal comprises depositing layers of different metals.

9. The method of claim 1 wherein depositing the metal comprises depositing a first layer of chromium and a second layer of gold over the chromium.

10. The method of claim 1 wherein depositing the metal comprises depositing a first layer of gold and a second layer of mercury over the gold.

11. The method of claim 1 further comprising treating the metal with a chemical solution to modify characteristics of the array of electrodes.

12. The method of claim 1 further comprising treating the metal with a thiol solution.

13. A sensor to measure an analyte in a solution comprising:

a substrate;

a plurality of electrode regions comprising conductive ink printed on the substrate;

electrical insulation deposited over one of the electrode regions; and

5 an array of electrodes in the one electrode region comprising metal deposited in an array of pores sonically ablated through the electrical insulation to the conductive ink.

14. The sensor of claim 13 wherein the metal comprises gold.

10 15. The sensor of claim 13 wherein the metal comprises platinum.

16. The sensor of claim 13 wherein the metal comprises chromium.

17. The sensor of claim 13 wherein the metal comprises nickel.

15 18. The sensor of claim 13 wherein the metal comprises cadmium.

19. The sensor of claim 13 wherein the metal comprises copper.

20 20. The sensor of claim 13 wherein the metal comprises layers of different metals.

21. The sensor of claim 13 wherein the metal comprises a first layer of chromium and a second layer of gold over the chromium.

22. The sensor of claim 13 wherein the metal comprises a first layer of gold and a second layer of mercury over the gold.

5      23. The sensor of claim 13 wherein the metal is treated with a chemical solution to modify characteristics of the array of electrodes.

24. The sensor of claim 13 wherein the metal is treated with a with a thiol solution.